

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

UTILITY PATENT APPLICATION

FOR

BEVERAGE CONTAINER WITH DETACHABLE REUSABLE  
HEAT TRANSFER CARTRIDGE

BY

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**BEVERAGE CONTAINER WITH DETACHABLE REUSABLE HEAT TRANSFER**

**CARTRIDGE**

**BACKGROUND OF THE INVENTION**

**Field of the Invention**

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This invention relates to a sports beverage container and reusable heat transfer cartridge therefore removably insertable into a cavity in the bottom of the container for heating or cooling same.

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**Description of the Prior Art**

Beverage containers that incorporate means to cool the contents of the container are known and by way of example reference maybe had to the following United States Patents known to the applicant and considered the most pertinent to the present invention: U.S. Patent 5,943,875 Granted Aug. 31, 1999 to J Hymes; U.S. Patent 5,609,309 Granted Mar, 11, 1997 to D. E. Green et al; U.S. Patent 5,555,741 Granted Sept 7, 1996 to K. G. Oakley; U.S. Patent 5,129,238 Granted July 14, 1992 to J. A. Schwartz et al; and U.S. Patent 5,009,083 Granted Apr, 23, 1991 to F. Spinos et al.

The cooling means is either a freezable substance enclosed within a sealed container, as is the case with the foregoing patents `039; `238; and `083, or caused by expansion of a gaseous substance as is the case with the foregoing patents `875 5 and `741. In the `039 patent the cooling material is merely inserted into the cavity of the beverage container and is free to move around therein. In the `238 and `083 the cooling insert is detachably attached to the cap of the beverage container and depends downwardly into the container. It is thereby fixed in 10 position but places the center of gravity of the mass relatively high whereby the empty container can readily tip over. In the `741 patent the expandible gaseous substance is confined within a cavity in the bottom of the container and as an improvement thereto the ,875 patent discloses confining the 15 gaseous substance in a separate container that is insertable into a cavity in the bottom of the beverage container. The insert is retained only by friction fit and thus could through use over time become loose and subject to possibly dropping out.

## SUMMARY OF THE INVENTION

The freezable and heatable heat transfer cartridge of the present invention is reusable and therefore preferred to the 5 expandible gas cooling means which much be replaced after each use.

The beverage container that has a removable cap at the top end and a cavity in the bottom end into which is removably 10 inserted a shell containing a freezable substance to cool the contents of the container or heatable substance to heat the contents of the container. The insert is releasably lockable in the container cavity and preferably tapers for a snug fit in the cavity.

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More particularly, the beverage container comprises a cylindrical body having opposite respective top and bottom ends. The top end is open and includes screw threads on the cylindrical body surrounding the open top end. A cap member 20 having means thereon threadingly engagable with the screw threads on the body. A cylindrical cavity is disposed in the bottom end. The cavity is disposed generally centrally of the

cylindrical body and having a first initial entry portion of selected diameter and a second continuing elongate portion that projects a selected distance into the interior of the container and is of smaller diameter than that of the first initial entry 5 portion. A heat transfer unit is removably insertable into the cavity for use in cooling or heating contents contained within the beverage container. The heat transfer unit comprises a shell of suitable material confining therein a freezable or heatable material. The heat transfer unit has a first and a 10 second contiguous cylindrical portion so dimensioned as to inter-nest in the cavity in the container.

Other objects, features, and advantages of the invention will be apparent with the following detailed description taken 15 in conjunction with the accompanying drawings showing a preferred embodiment of the invention.

#### BRIEF DESCRIPTION OF THE DRAWINGS

20 A better understanding of the present invention will be had upon reference to the following description in conjunction with

the accompanying drawings in which like numerals refer to like parts throughout the several views and wherein:

5       Figure 1 is an isometric of the beverage container of the present invention:

Figure 2 is a front elevational view of the container of figure 1 but with the screw-on cap removed;

10       Figure 3 is an isometric in broken line of the container of figure 1 illustrating, in solid line, an insert for the cavity in the bottom wall of the container ; and

15       Figure 4 is an isometric of the insert showing the bottom face thereof.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

The aforementioned United States patents 5,129,238 and the 20 United States patents listed therein 4,183,226; 4,338,795; 4,383,422; 4,932,225; and 4,741,176 disclose the use of a

freezable substance and the disclosures of all of the same are incorporated herein in their entirety by reference thereto.

Shown in Figures 1 and 2 is a beverage container 10 having an open top 11 surrounded by external threads 12 on which is threaded a removable cap 13. The container side wall is cylindrical and strengthened by ribbed sections designated 14, 15 and 16. The container has a bottom wall 17 in which there is an elongate cylindrical cavity 18 with an entry portion 19 that is larger in diameter than that of the cavity. Moreover, the cap embodiment shown is of a tamper proof whereby the design of the cavity prevents contamination if used properly.

In Figures 3 and 4 there is illustrated a freezable/heatable insert 20 that is removably insertable into the cavity 18 in the beverage container. The insert is a shell 21 made of a suitable plastics material and shaped for a snug or close fit relation within the cavity 18 including the entry portion 19. The insert 20 may be disposable or reuseable. The shell encloses any one of a number of known freezable or

heatable substances 22 used for cooling or heating food and/or beverages.

For instance the insertable substance 22 may comprise a  
5 freezable substance which can be selected from a cold source such as ice from water frozen via a deepfreeze providing instantaneous cooling of the beverage; another insertable substance may be an instant freeze chemical composition whereby intermixing of two chemicals separated from one another cause  
10 them to instantly freeze, thereby forming a portable quick freeze substance 22; the insertable substance 22 maybe formed of an instant heat promoting chemical composition whereby intermixing of two chemicals separated from one another cause them to instantly react exothermally releasing heat and thereby  
15 forming a portable quick heating substance; the insertable substance 22 may be a material which is readily heated by use of a microwave and retains heat in order to be insertable into the cavity 18 in the beverage container; or the insertable substance may simply be a hot liquid heated from any conventional source  
20 and used to heat the liquid.

As shown in the figures, the lower end of the insert has a relatively short cylindrical wall 23 terminating in a bottom face 24 that has a number of finger grip depressions 25 therein. One or more pins 26 project outwardly from the cylindrical wall 5 and they are positioned to co-operate with inclined slots 27 suitably located in the entry portion 19 of the cavity.

Referring to Figure 5 each of the spaced apart inclined slots 27 have an open entry portion 27A in the bottom wall 17 10 of the container and terminate at the other end in a stepped down portion 27B. In use the insert can be taken from a freezer in it's frozen state and inserted into the cavity 18, 19. The insert is rotated to align the pins 26 with the notches 27 and inserted into the entry portion thereof. Rotating the insert a 15 partial turn causes the pins to slid in the inclined slots forcing the insert into the cavity. The pins in their final inserted position are located in the stepped down portion 27B of the notch( or equivalent thereof) thereby locking the insert in it's final 'use' position in the container cavity.

If desired the insert can be made with a slight taper decreasing in outer diameter in a direction away from the enlarged base portion to facilitate placing the insert in the container cavity and removing it therefrom. The cavity walls can  
5 also be provided with a taper corresponding to that of the insert and so sized that the two surfaces contact one another as the insert is forced to it's final position in the cavity by the pins sliding in the slopped notches i.e. channels. Of course the pins and slopped notches can be replaced by co-operating  
10 screw threads or the like. From a heat transfer point of view it is desirable to have contact and preferably good contact between the outer surface of the insert and the inner surface of the cavity,

15 The foregoing detailed description is given primarily for clearness of understanding and no unnecessary limitations are to be understood therefrom, for modification will become obvious to those skilled in the art upon reading this disclosure and may be made upon departing from the spirit of the invention and scope  
20 of the appended claims. Accordingly, this invention is not intended to be limited by the specific exemplifications

presented hereinabove. Rather, what is intended to be covered is within the spirit and scope of the appended claims.

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